

WHAT IS CLAIMED IS:

1. An arrangement for implementing a vascular anastomosis between a graft vessel and a target vessel and subsequently creating a fluid flow passageway between said vessels; comprising:

5 a wire having one end inserted into said target vessel by puncturing the wall of said vessel and exiting said vessel by puncturing the wall at a spaced location so as to define a region of contact between said vessels; said wire puncturing through the walls of said graft vessel upon positioning of said graft vessel on said target vessel;

10 means implementing anastomosis between said vessels in said region of contact between said vessels; and

means for causing said wire to cut through the adjoining walls of said vessels within the confines of said region of contact so as to create said fluid flow passageway between said vessels.

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2. An arrangement as claimed in Claim 1, wherein said wire is a suture having suture needles attached at opposite ends thereof for puncturing through said vessel walls.

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3. An arrangement as claimed in Claim 1, wherein said wire is longitudinally reciprocated so as to cut through the vessel walls and form the fluid flow passageway therebetween.

4. An arrangement as claimed in Claim 3, wherein said wire includes an abrasive surface to assist in cutting through said vessel walls.

5. An arrangement as claimed in Claim 1, wherein a rod-shaped tool is provided in
5 said graft vessel to exert pressure in maintaining contact between said vessels during anastomosis and the creating of said fluid flow passageway between said vessels.

6. An arrangement as claimed in Claim 1, wherein said vessels are in a side-to-side
10 contacting relationship in at least the region of contact between said vessels, and upon the creating of said fluid flow passageway, the incisions in each of said two vessels are in an edge-to-edge relationship for optimal healing thereof.

7. An arrangement as claimed in Claim 1, wherein said vessels are in an end-to-
15 side contacting relationship in which an open end of said graft vessel is positioned against the wall of said target vessel.

8. An arrangement as claimed in Claim 7, wherein said wire extends interiorly of
said graft vessel and exits through opposite side walls thereof at a spacing from said
20 target vessel, said wire being manipulatable so as to align and contact said vessels with each other.

9. An arrangement as claimed in Claim 1, wherein said wire is an insulated electrically-conductive wire having an uninsulated portion extending within said target vessel in the region of contact between the vessels; and means for imparting electrical energy to said wire to facilitate said uninsulated wire portion in creating said fluid flow passageway.

10. An arrangement as claimed in Claim 9, wherein a pair of said wires overlap side-by-side in said contact regions and are electrically energizable through bipolar ESU to cut through the adjoining vessel walls.

11. An arrangement as claimed in Claim 9, wherein forceps having electrically conductive tines engage said wires so as to impart an electrical current thereto for creating said flow passageway between said vessels.

12. An arrangement as claimed in Claim 1, wherein said wire is supplied with RF-energy to assist in cutting the vessel walls and form said fluid flow passageway between said vessels.

13. An arrangement as claimed in Claim 9, wherein said wire is color-coded to facilitate alignment of the bare wire portion within said target vessel in the contact region between said vessels.

14. An arrangement as claimed in Claim 1, wherein a hook-shaped needle is attached to the leading end of said suture wire, said needle being dimensioned so as to define the distance between the inserting and exiting punctures in the walls of said vessels in the contact region between said vessels.

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15. An arrangement as claimed in Claim 1, wherein said anastomosis comprises applying a curable adhesive between said vessel.

16. An arrangement as claimed in Claim 1, wherein said anastomosis comprises stitching sutures about the joining sides of said vessels to abut the graft vessel to the target vessel.

17. An arrangement as claimed in Claim 1, wherein said anastomosis comprises applying a glue-coated suture filament pattern to the juncture between said vessels so as to adhere said vessels to each other.

18. An arrangement as claimed in Claim 17, wherein said glue comprises a bio-adhesive, such as cyano-acrylate.

19. An arrangement as claimed in Claim 17, wherein a cannulated syringe applies said glue-coated suture filament to said vessels.

20. An arrangement as claimed in Claim 17, wherein successive sutures filament segments are applied to said vessels so as to produce a fabric of sutures on said vessels.

21. A method for implementing a vascular anastomosis between a graft vessel and a target vessel and subsequently creating a fluid flow passageway between said vessels;

5 said method comprising:

inserting a wire with one end into said target vessel by puncturing the wall of said vessel and exiting said vessel by puncturing the wall at a spaced location so as to define a region of contact between said vessels; said wire puncturing through the walls of said graft vessel upon positioning of said graft vessel on said target vessel;

10 implementing anastomosis between said vessels in said region of contact between said vessels; and

for causing said wire to cut through the adjoining walls of said vessels within the confines of said region of contact so as to create said fluid flow passageway between said vessels.

22. A method as claimed in Claim 21, wherein said wire is a suture having suture needles attached at opposite ends thereof for puncturing through said vessel walls.

20 23. A method as claimed in Claim 21, wherein said wire is longitudinally reciprocated so as to cut through the vessel walls and form the fluid flow passageway therebetween.

24. A method as claimed in Claim 23, wherein said wire includes an abrasive surface to assist in cutting through said vessel walls.

25. A method as claimed in Claim 21, wherein a rod-shaped tool is provided in said
5 graft vessel to exert pressure in maintaining contact between said vessels during anastomosis and the creating of said fluid flow passageway between said vessels.

26. A method as claimed in Claim 21, wherein said vessels are in an side-to-side contacting relationship in at least the region of contact between said vessels, and upon
10 the creating of said fluid flow passageway, the incisions in each of said two vessels are in an edge-to-edge relationship for optimal healing thereof..

27. A method as claimed in Claim 21, wherein said vessels are in an end-to-side contacting relationship in which an open end of said graft vessel is positioned against
15 the wall of said target vessel.

28. A method as claimed in Claim 27, wherein said wire extends interiorly of said graft vessel and exits through opposite side walls thereof at a spacing from said target vessel, said wire being manipulatable so as to align and contact said vessels with each
20 other.

29. A method as claimed in Claim 21, wherein said wire is an insulated electrically-conductive wire having an uninsulated portion extending within said target vessel in the region of contact between the vessels; and means for imparting electrical energy to said wire to facilitate said uninsulated wire portion in creating said fluid flow passageway.

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30. A method as claimed in Claim 29, wherein a pair of said wires overlap side-by-side in said contact regions and are electrically energizable through bipolar ESU to cut through the adjoining vessel walls.

10 31. A method as claimed in Claim 29, wherein forceps having electrically conductive tines engage said wires so as to impart an electrical current thereto for creating said flow passageway between said vessels.

15 32. A method as claimed in Claim 21, wherein said wire is supplied with RF-energy to assist in cutting the vessel walls and form said fluid flow passageway between said vessels.

20 33. A method as claimed in Claim 29, wherein said wire is color-coded to facilitate alignment of the bare wire portion within said target vessel in the contact region between said vessels.

34. A method as claimed in Claim 21, wherein a hook-shaped needle is attached to the leading end of said suture wire, said needle being dimensioned so as to define the distance between the inserting and exiting punctures in the walls of said vessels in the contact region between said vessels.

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35. A method as claimed in Claim 21, wherein said anastomosis comprises applying a curable adhesive between said vessel.

36. A method as claimed in Claim 21, wherein said anastomosis comprises stitching
10 sutures about the joining sides of said vessels to abut the graft vessel to the target vessel.

37. A method as claimed in Claim 21, wherein said anastomosis comprises applying
a glue-coated suture filament pattern to the juncture between said vessels so as to adhere
15 said vessels to each other.

38. A method as claimed in Claim 37, wherein said glue comprises a bio-adhesive, such as cyano-acrylate.

20 39. A method as claimed in Claim 37, wherein a cannulated syringe applies said glue-coated suture filament to said vessels.

40. A method as claimed in Claim 37, wherein successive sutures filament segments are applied to said vessels so as to produce a fabric of sutures on said vessels.

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